Space Weather Forecast

Issued on Wednesday 18 December 2024 at 12:23 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares (Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with frequent Common class flares. There are eight sunspot regions on the Earth-facing disc. A region in the southwest appears to be the most complex sunspot group. A second region slightly further east has shown some recent development and appears stable. Some Coronal Mass Ejections (CME) were observed off the East limb early on the 17 Dec, unlikely to be Earth-directed, followed by a notable halo CME at 17/1600 UTC. From analysis this looks most likely to be far-sided with limited impact to Earth.

Solar Wind / Geomagnetic Activity: Solar winds started at strong levels with the arrival of a CME at 17/0437UTC. Solar winds having peaked at 700km/s around 17/0900 UTC declined to Elevated levels at 500km/s. The Interplanetary Magnetic Field (IMF), was initially Strong but is now at Weak levels. The important northwards/southwards component turned southwards from 17/1800 UTC. to reach Moderate levels and is now Weak. Geomagnetic activity started at Active elevels and is now Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate Solar activity is forecast with a chance of Moderate class flares, increasing gradually through the forecast period.

Solar Wind / Geomagnetic Activity: The CME experienced at Earth during the morning of 17 Dec is likely has now largely waned with Quiet to Unsettled conditions. Several other CMEs that left the Sun in the past few days are forecast as near misses, but cannot be completely ruled out as flanking arrivals at Earth, so there is some uncertainty in the forecast currently. Active intervals are most likely at first during day 1 (18 Dec).

Energetic Particles / Solar Radiation: There is a slight chance of S1/Minor solar radiation storms or greater, in response to any notable solar flares.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	30	40	60	60
Very Active	R3-R5 (X Class)	No	1	5	5	5

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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